भारतीय मानक
*Indian Standard*

**IS 4830 : 2018**

# अमोनियम फोस्फेट सल्फेट ग्रेन्यूलर — विशिष्टि

*( दूसरा पुनरीक्षण )*

# Ammonium Phosphate Sulphate, Granular — Specification

*( Second Revision )*

ICS 65.080



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**December 2018** **Price Group 2**

Soil Quality and Fertilizers Sectional Committee, FAD 07

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Soil Quality and Fertilizers Sectional Committee had been approved by the Food and Agriculture Division Council.

This standard was first published in 1968 which covered Grade 16-20-0 of Ammonium Phosphate Sulphate. Another grade of Ammonium Phosphate Sulphate 19-5-0 was covered in a separate standard, IS 5407 : 1969. The Committee responsible for the preparation of these standards had decided to amalgamate them and also to cover two more grades, namely 20-20-0 and 18-9-0. The first revision of IS 4830 was, therefore, taken up in 1979 amalgamating IS 4830 : 1968 and IS 5407 : 1969. With the publication of this amalgamated revision, IS 5407 : 1969 was withdrawn.

The present revision is taken up to align the requirements of Ammonium Phosphate Sulphate with those specified *in Fertilizer (Control) Order*, 1985. Only three grades as per this order have been retained and grade 19-5-0 has been dispensed with.

For particle size, the use of IS Sieves conforming to IS 460 is prescribed. Where IS Sieves are not available, other standard sieves as judged from aperture size may be used.

In the formulation of this standard, due consideration has been given to the provisions of the *Fertilizer (Control) Order*, 1985, the *Essential Commodities Act*, 1955 and the *Legal Metrology (Packaged Commodities) Rules*, 2011. However this standard is subject to the provisions imposed under this Order, wherever applicable.

For purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off of numerals (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Indian Standard*

# AMMONIUM PHOSPHATE SULPHATE, GRANULAR — SPECIFICATION

*( Second Revision )*

## 1 SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for ammonium phosphate sulphate, granular.

## 2 REFERENCES

The following standards contain provisions, which through reference in this text constitute provisions of this standard. At the time of publication the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

| *IS No.* | *Title* |
|---|---|
| 460 | Test sieves: |
| (Part 1) : 1985 | Wire cloth test sieves |
| (Part 2) : 1985 | Perforated plate test sieves |
| 5985 : 1985 | Code of practices for handling and storage of bagged fertilizers |
| 6092 | Method of sampling and test for fertilizers: |
| (Part 1) : 1985 | Sampling |
| (Part 2) : 1985 | Determination of nitrogen |
| (Part 3) : 1985 | Determination of phosphorus |
| (Part 5) : 1985 | Determination of secondary elements and micronutrients |
| (Part 6) : 1985 | Determination of moisture and impurities |
| 7406 (Part 1) : 1984 | Specification for jute bags for packing fertilizers: Part 1 Laminated bags manufactured from 407g/m$^2$: 85 × 39 tarpaulin fabric |
| 9755 : 2003 | High density polyethylene (HDPE)/polypropylene (PP) woven sacks for packing fertilizers — Specification |

## 3 GRADES

**3.1** There shall be three grades of the material, depending on the content(s) of nitrogen; phosphorus and potash (N-P-K), namely:

a) Grade 16-20-0,
b) Grade 20-20-0, and
c) Grade 18-9-0.

## 4 REQUIREMENTS

### 4.1 Description

The material shall be in the form of free-flowing granules.

### 4.2 Particle Size

The particle size of the material shall be such that 90 percent of the material lies between 4 mm IS Sieve and 1 mm IS Sieve, and not more than 5 percent by mass shall pass through 1 mm IS Sieve.

### 4.3 Resistance to Breakdown of Granules

A single granule of the material, taken from the size range 2.8 mm to 3.35 mm shall resist a load of 1.0 kg, *Min*, when tested as prescribed in Annex A.

### 4.4 Lump Formation

The material shall pass the test prescribed in Annex B.

**4.5** The material shall also comply with the requirements given in Table 1.

## 5 PACKING AND MARKING

### 5.1 Packing

The material shall be packed in Laminated Jute bags conforming to IS 7406 (Part 1) or high density polyethylene (HDPE)/Polypropylene (PP) woven sacks conforming to IS 9755, in quantities as stipulated in *Essential Commodities Act*, 1955 and the *Legal Metrology (Packaged Commodities) Rules*, 2011 and in accordance with *Fertilizer (Control) Order*, 1985.

### 5.2 Marking

The containers shall be securely closed and marked with the following:

a) Name of manufacturer/Pool handling agency/ Importer (where a manufacturer is also pool handling agency, word ‘P’ and as the case may be, if an importer the word ‘I’ shall be written against the name of such manufacturer, if the bag contains imported fertilizer);
b) Trade-mark and/or Brand name, if any;
c) Name of the fertilizer (in case of imported fertilizer, the word ‘Imported’ shall be superscribed);

**Table 1 Requirements for Ammonium Phosphate Sulphate, Granular**
(*Clause* 4.5)

| Sl No. | Characteristic | Requirement for Grade | | | Methods of Test, Ref to Clause |
|---|---|---|---|---|---|
| | | 16–20–0 | 20–20–0 | 18–9–0 | |
| (1) | (2) | (3) | (4) | (5) | (6) |
| i) | Moisture, percent by weight, *Max*[1)] | 1.0 | 1.0 | 1.0 | **4** of IS 6092 (Part 6) |
| ii) | Total nitrogen, percent by weight, *Min* | – | 20.0 | – | **8** of IS 6092 (Part 2) |
| iii) | Ammoniacal nitrogen (as N), percent by weight, *Min*[2)] | 16.0 | 18.0 | 18.0 | **11** of IS 6092 (Part 2) |
| iv) | Urea nitrogen, percent by weight, *Max* | – | 2.0 | – | **17** of IS 6092 (Part 2) |
| v) | Neutral ammonium citrate soluble phosphates (as $P_2O_5$), percent by weight, *Min* | 20.0 | 20.0 | 9.0 | **9** of IS 6092 (Part 3) |
| vi) | Water soluble phosphates (as $P_2O_5$), percent by weight, *Min*[2)] | 19.5 | 17.0 | 8.5 | **7** of IS 6092 (Part 3) |
| vii) | Sulphur (as S), percent by weight, *Min*[2)] | 13.0 | 13.0 | – | **5.3** of IS 6092 (Part 5) |

[1)] A tolerance of 0.3 units of moisture content shall be permissible.

[2)] Tolerance varies with nutrient level in fertilizer subject to maximum of 2 percent for all combined nutrients:

| *Nutrient level (%)* | *Tolerance level (unit)* |
|---|---|
| 15 or less | 0.5 |
| 16 to 20 | 0.6 |
| 21 or more | 0.7 |

d) Percent nutrient as total nitrogen, ammoniacal nitrogen, urea nitrogen, neutral ammonium citrate soluble phosphates (as $P_2O_5$), water soluble phosphates (as $P_2O_5$) and sulphur by the letters: 'N', 'AN', 'UN', 'P(CS)', 'P(WS)' and 'S', respectively;

e) Gross and net quantity, in kg;

f) Batch number;

g) Month and year of manufacture/import (in case of imported fertilizer); and

h) Any other information required under the *Fertilizer (Control) Order*, 1985 and the *Legal Metrology (Packaged Commodities) Rules*, 2011.

**5.2.1** *BIS Certification Marking*

The packages may also be marked with the Standard Mark.

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act* 2016, and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 6 HANDLING AND STORAGE

**6.1** The handling and storage of the material shall be in accordance with IS 5985.

## 7 SAMPLING

**7.1** Representative samples of the material shall be as prescribed in IS 6092 (Part 1).

### 7.2 Number of Tests

Tests for all the requirements given in **4** shall be conducted on the composite test sample.

### 7.3 Criteria for Conformity

For declaring the conformity of the lot to requirements of this standard, the test results on the composite sample shall satisfy all the requirement specified in **4**.

# ANNEX A

(*Clause* 4.3)

## METHODS OF TEST FOR DETERMINATION OF RESISTANCE TO BREAKDOWN OF GRANULES

### A-1 GENERAL

Two methods are described here. The methods are used to determine comparative hardness of granules and applicable to granulated or pelleted forms of solid fertilizers. Any of the two methods may be used.

### A-1.1 Method A

**A-1.1.1** *Apparatus*

**A-1.1.2** *Hardness tester* — as shown in Fig. 1.

**A-1.1.3** *Procedure*

Collect a portion of the sample lying in the size range 2.80 and 3.35 mm. From the portion obtained pick out at random 25 granules.

Test each granule successively. Place each granule under the ratchet and slowly screw it down until the particle crushes. Note the crush point on the scale indicator and record the load required to crush it.

**A-1.1.4** *Calculation*

Calculate in kg the mean of the 25 observations and report the results.

### A-1.2 Method B

**A-1.2.1** *Apparatus* — The apparatus, made of mild steel, is shown in Fig. 2. It consists of two parts, namely a frame and a plunger. The frame is made of three circular plates and three rods fitted with nut and bolt. These rods are fitted vertically on the base plate and the other two plates are fixed tightly in position. Circular holes are made at the centre in these two plates as shown in Fig. 2 through which the plunger rod can pass smoothly. The plunger weighing 150 g consists of a circular plate at the top (for keeping additional weights) and a narrow stem of 'diameter 4 mm' at the base which can rest either on the base plate or on the fertilizer granule.

**A-1.2.2** *Procedure*

Collect a portion of the sample lying in the size range 2.80 mm to 3.35 mm. From the portion obtained pick out at random 25 granules.

Test each granule successively. Place each granule at the centre of the base plate and keep the stem of the plunger just on its top. Put additional weights on the top of the plunger incrementally and note the total mass of the plunger itself plus the additional mass at which the granule crushes.

**A-1.2.3** *Calculation*

Calculate in kg the mean of the 25 observations and report the results.

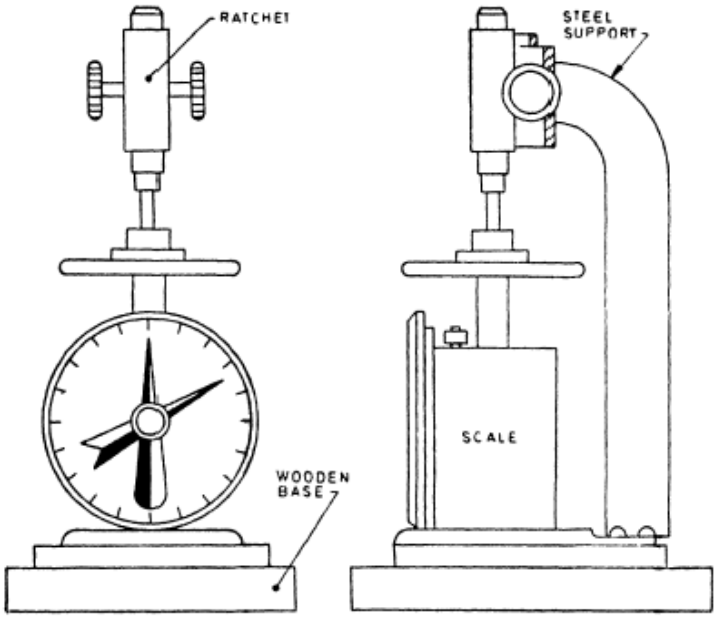
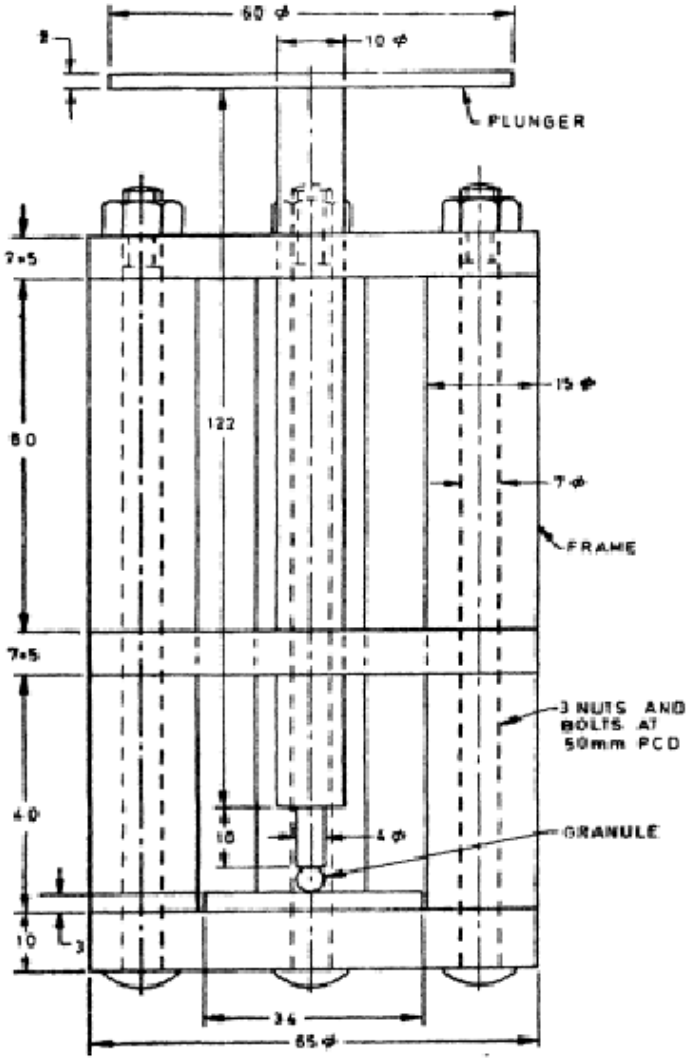



FIG. 1 HARDNESS TESTER, METHOD A




All dimensions in millimetres.

FIG. 2 HARDNESS TESTER, METHOD B

## ANNEX B

(*Clause* 4.4)

### METHOD OF TEST FOR LUMP FORMATION

**B-1 PROCEDURE**

**B-1.1** Store one 50 kg packing of the material under a mass equivalent to twelve 50 kg sample bags of the material for 7 days. Then drop the sample bag from a height of 1.5 meters on to hard concrete floor. Empty out the contents of the bag and determine the quantity of the material larger than 12 mm size with the help of a standard sieve.

**B-1.2** The material shall be taken to have passed the test if not more than 5 percent of the material is larger than 12 mm in size.

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This Indian Standard has been developed from Doc No.: FAD 07 (2803).

**Amendments Issued Since Publication**

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
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